The Fallacies of IP/Optical Convergence and a Case for Smart Coherent Pluggables

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March 7, 2024

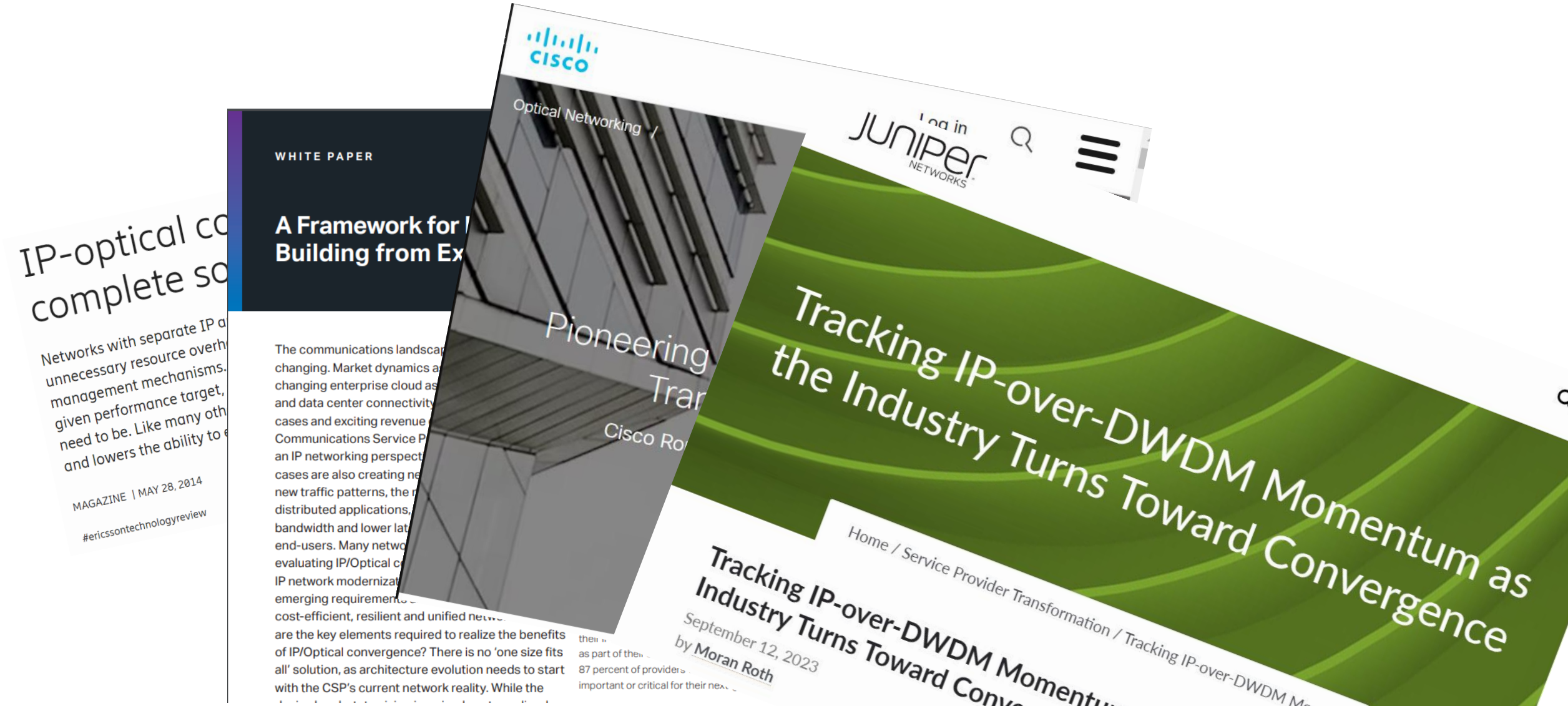
Question

What is from 1984 and has seven layers?

Ignorance is bliss

Ignorance **about layer 1** is bliss

Ignorance **about layer 3** is bliss



The Rise of Coherent Pluggable Optics

Performance in Ideal Circumstances

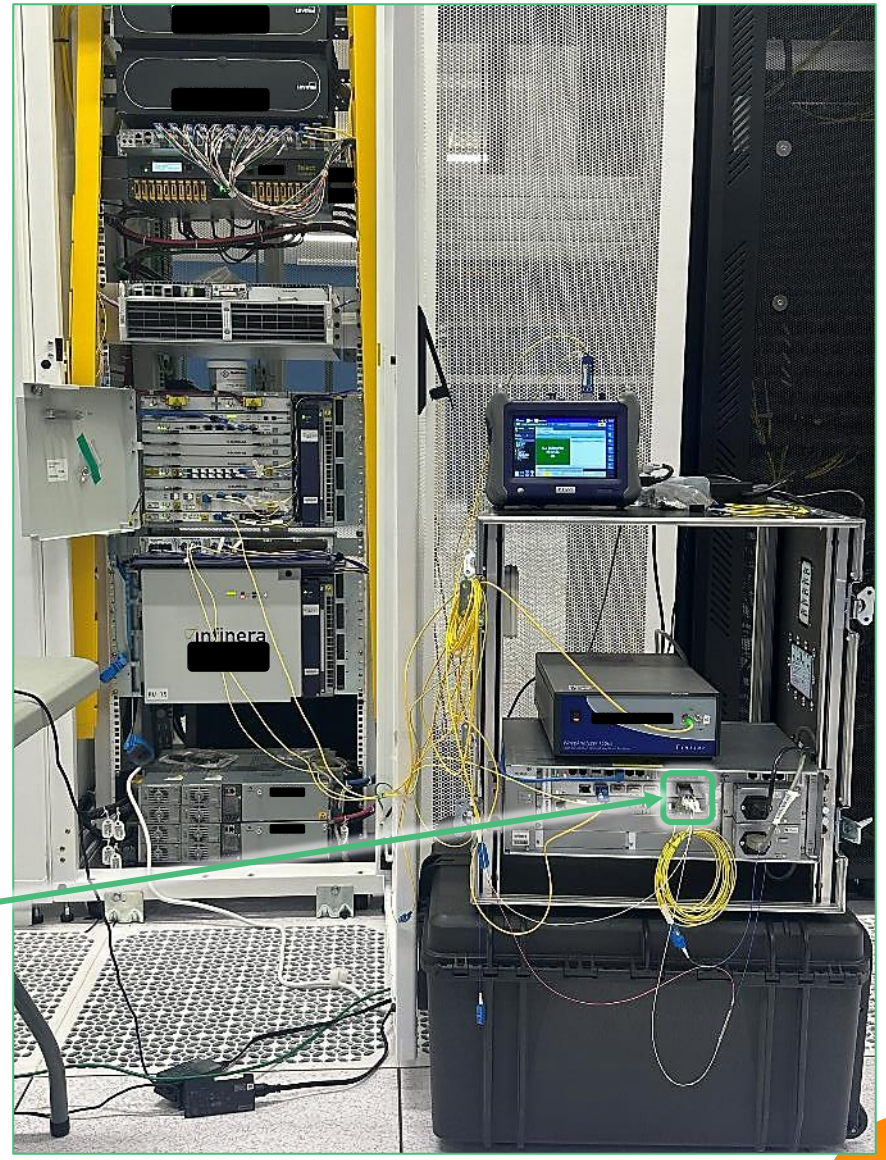
1,800KM – LIVE NETWORK

400G QSFP-DD

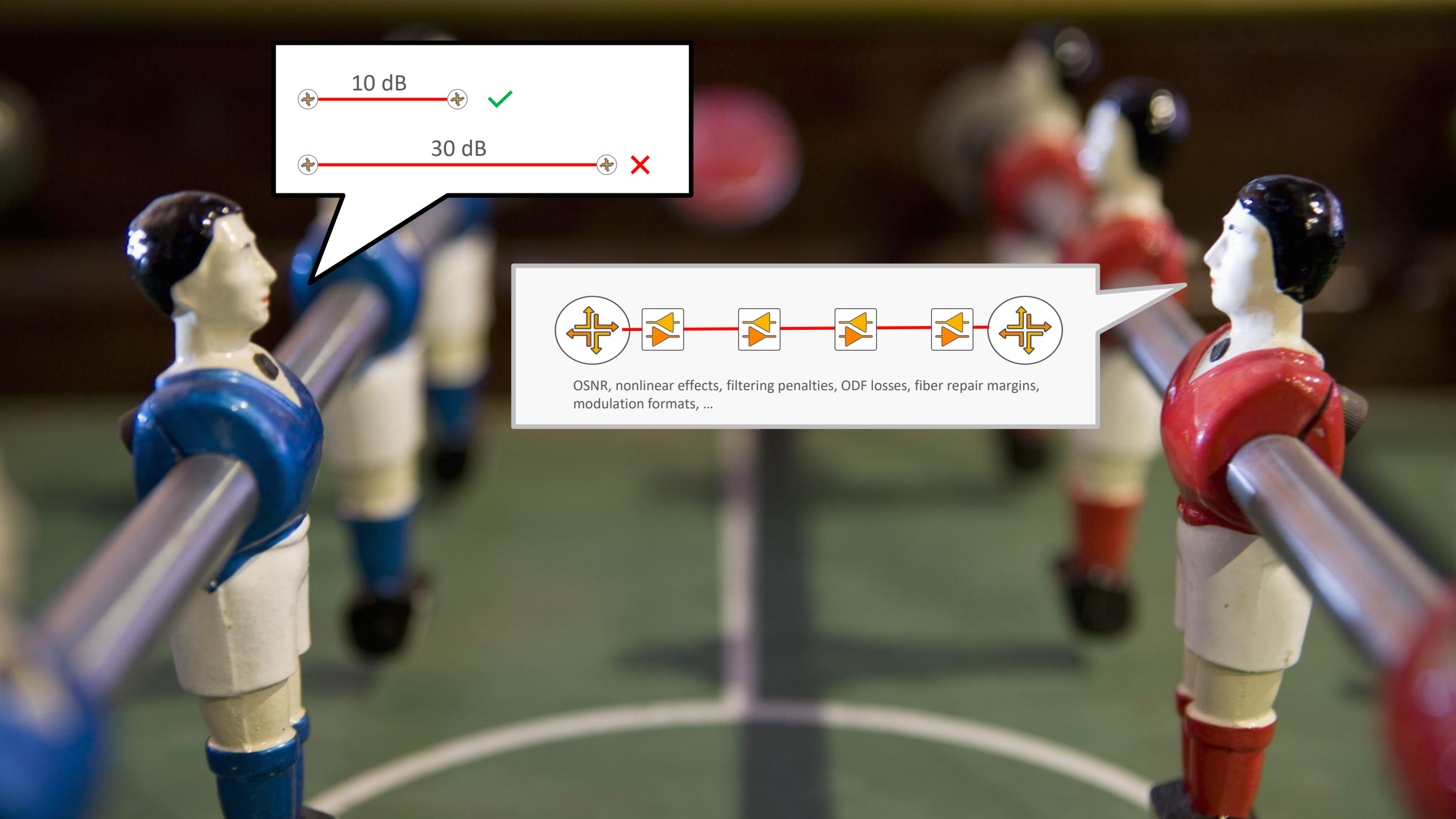
Spectrum shared with multiple vendors

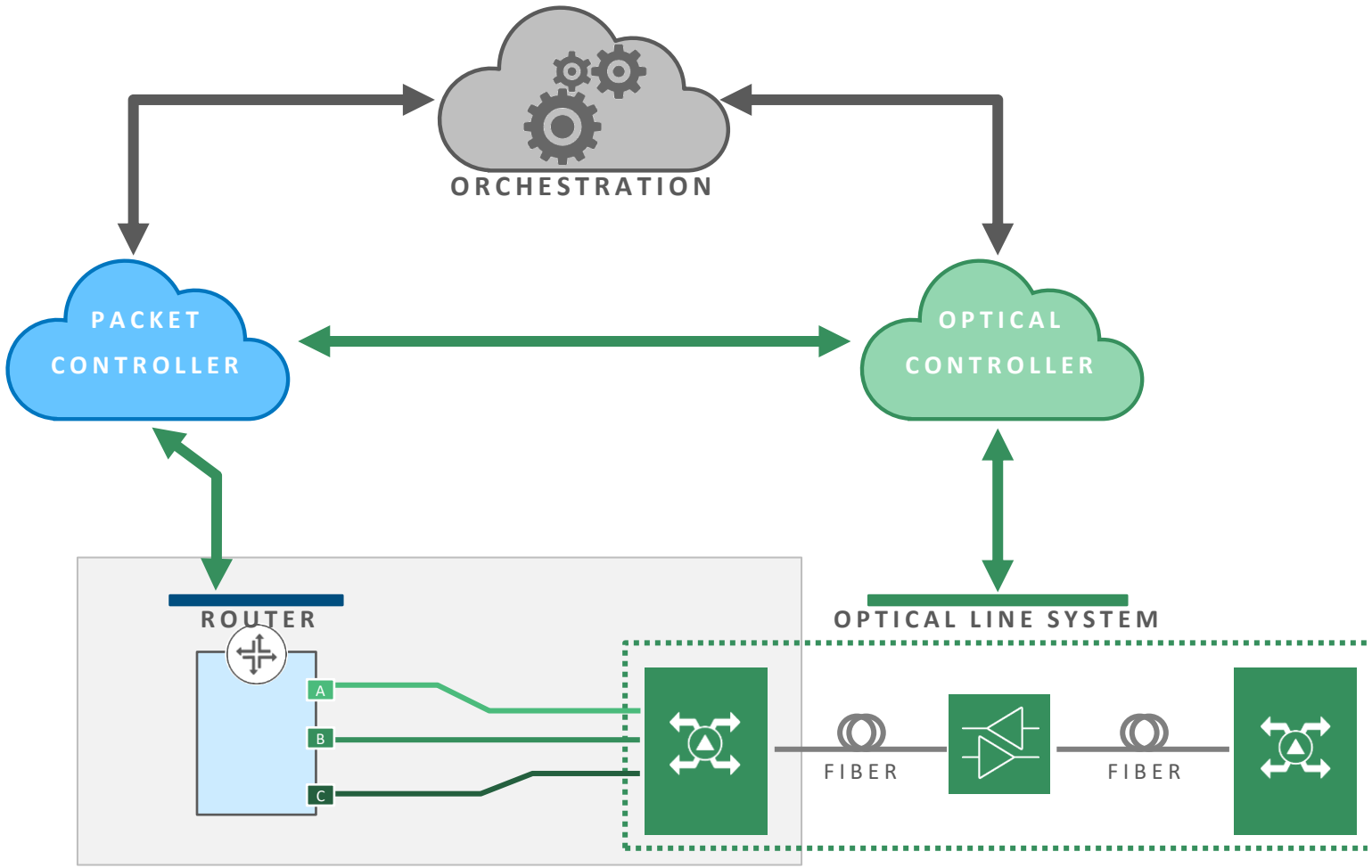
400G 16QAM and SMF-28 fiber

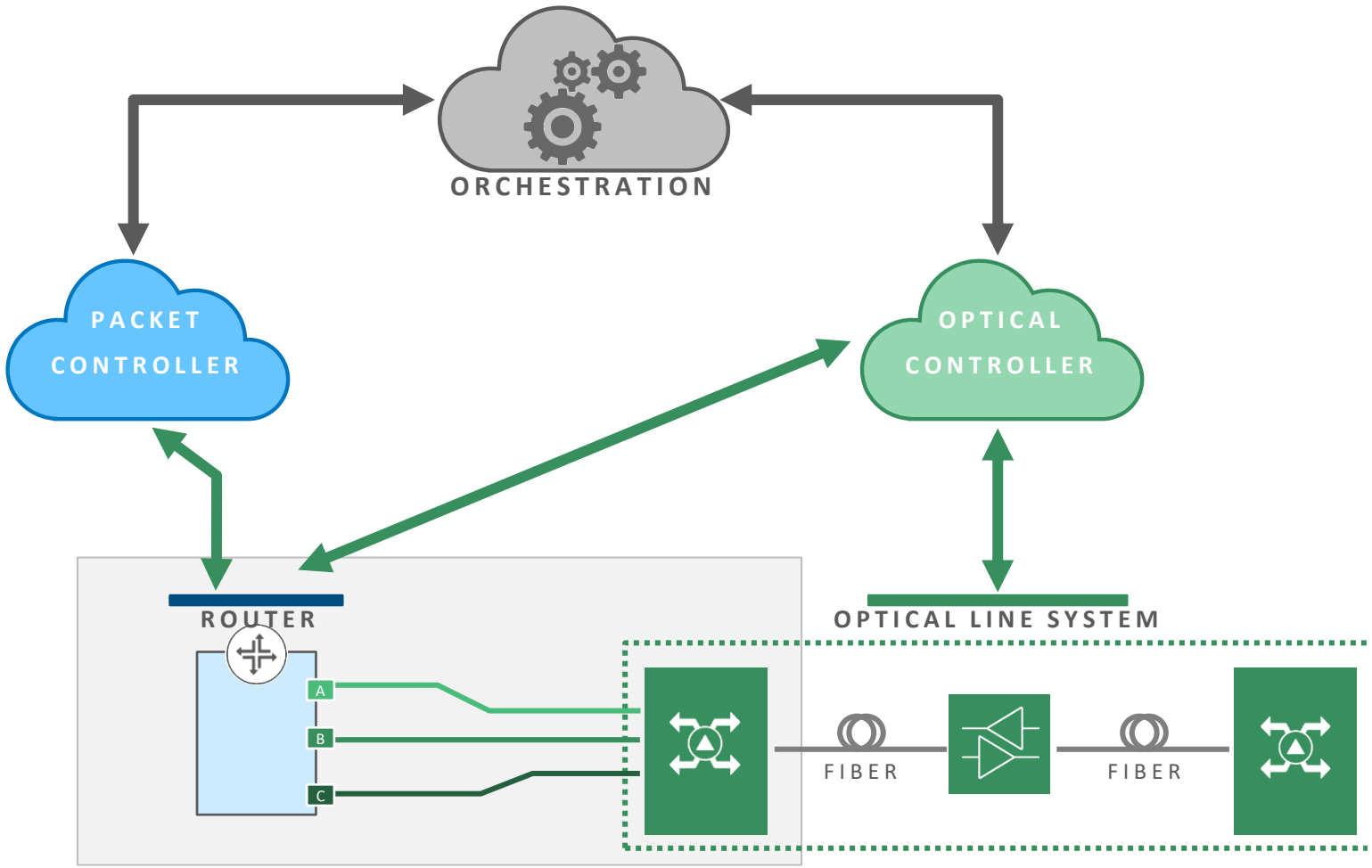
ICE-X 400G ZR+




connector breakout ?
breakout <keyword>
<keyword> - (c1-40g|c4-10g|c1-100g|c4-25g|c10-10g|c1-400g|c2-100g|c4-100g|c1-10g|c1-25g|c1-50g|c8-50g|c1-800g|c3-100g|c8-100g|c2-400g|c1-1g|c1-100g-aui2|c2-100g-aui2)


10 dB
30 dB
OSNR, nonlinear effects, filtering penalties, ODF losses, fiber repair margins, modulation formats, …


ORCHESTRATION
PACKET CONTROLLER
OPTICAL CONTROLLER
ROUTER
OPTICAL LINE SYSTEM
A
B
C
FIBER
FIBER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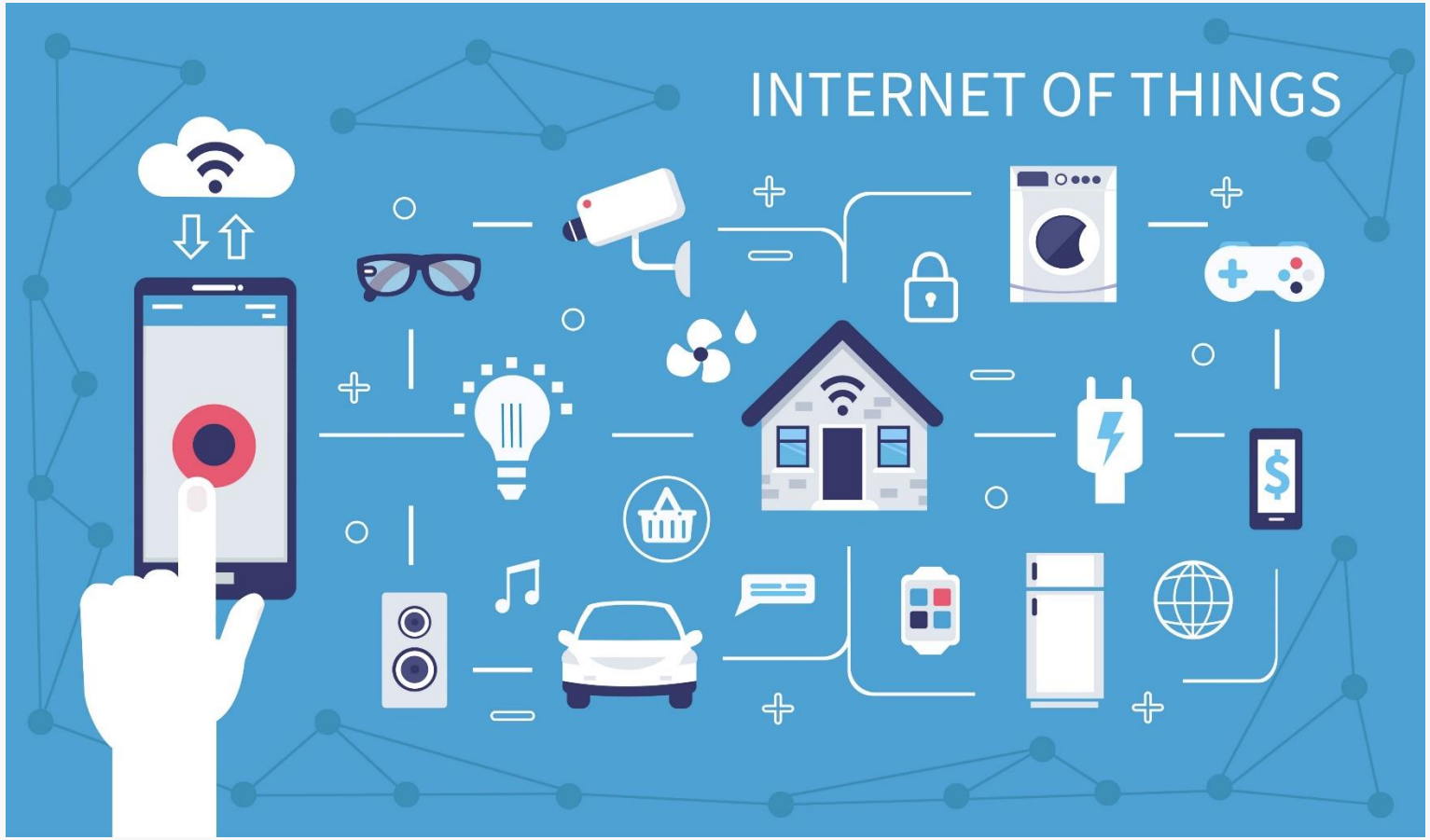
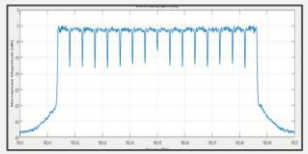
Taking Cues from Adjacent Markets I

Taking Cues from Adjacent Markets II



Intelligent Coherent Pluggables



Subcarrier-based architecture

DSP

✓ System on a Chip

Software configurable Point-to-Point and Point-to-Multipoint control plane

Integrated capabilities

- ✓ Embedded Control Plane
- ✓ Remote Management
- ✓ Power Control
- ✓ OSA

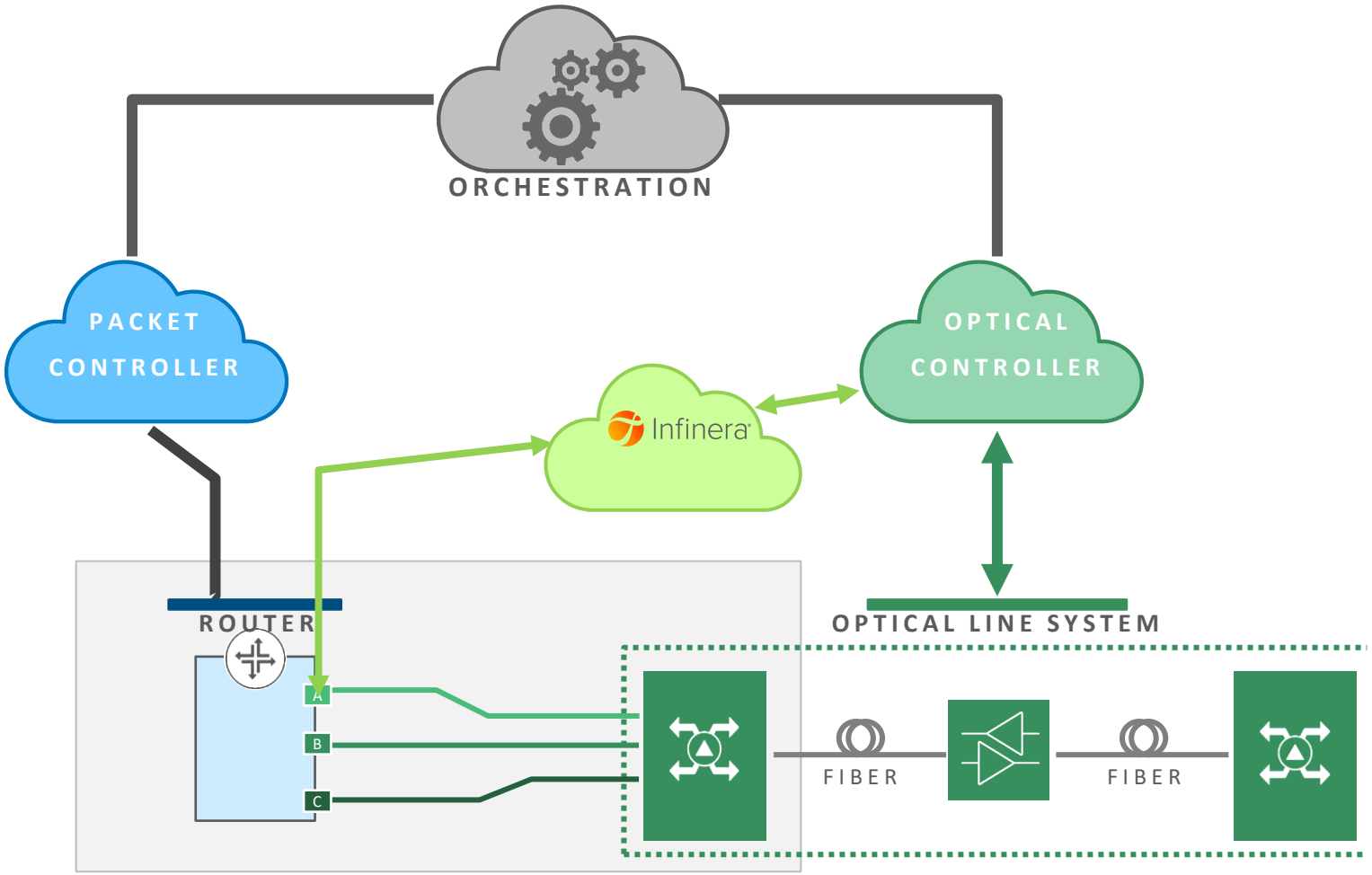
TROSA

- ✓ PIC/Monolithically Integrated Optics
- ✓ 0⁺ dBm

Diversity of Network Configurations

P2P
P2MP
Ring
Horseshoe
PON
Single Fiber

Host-Independent IPoDWDM Management



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10g|c1-25g|c1-50g|c8-50g|c1-800g|c3-
100g|c8-100g|c2-400g|c1-1g|c1-100g-
aui2|c2-100g-aui2)
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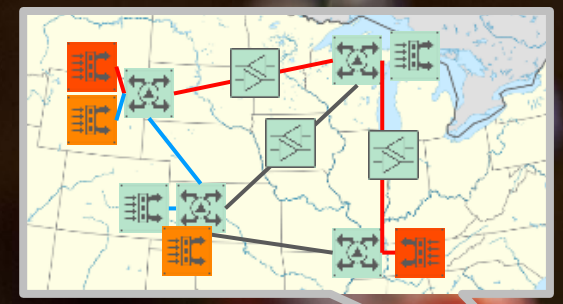

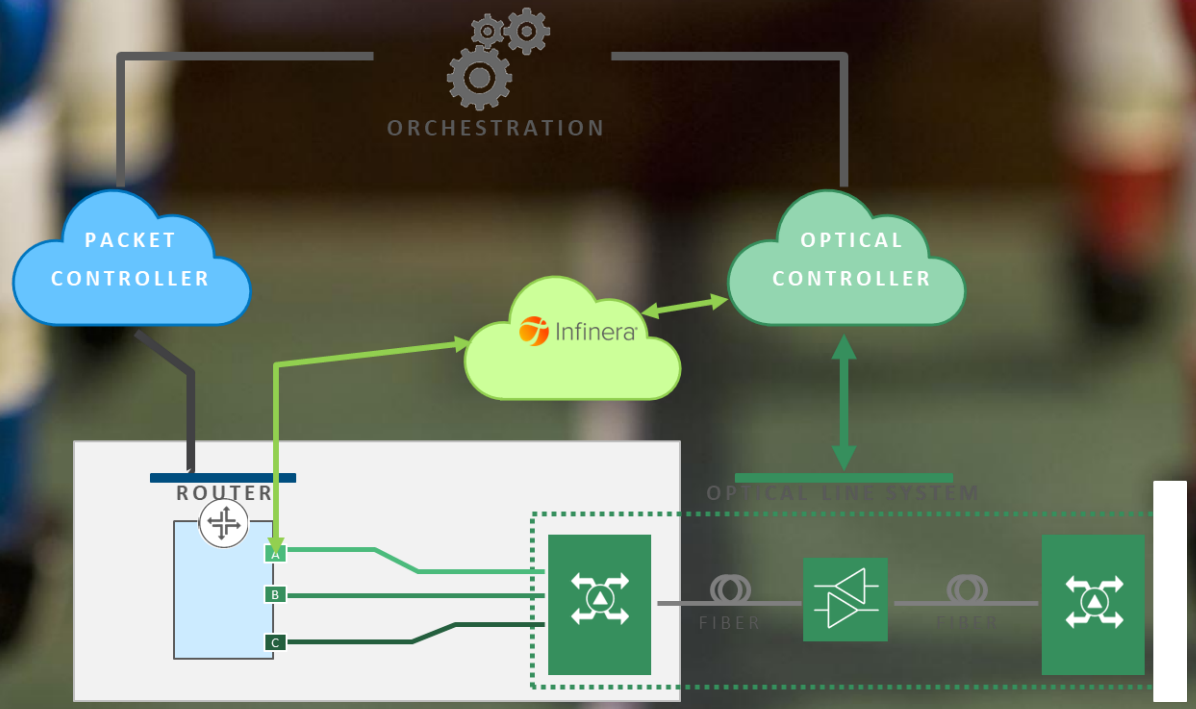

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